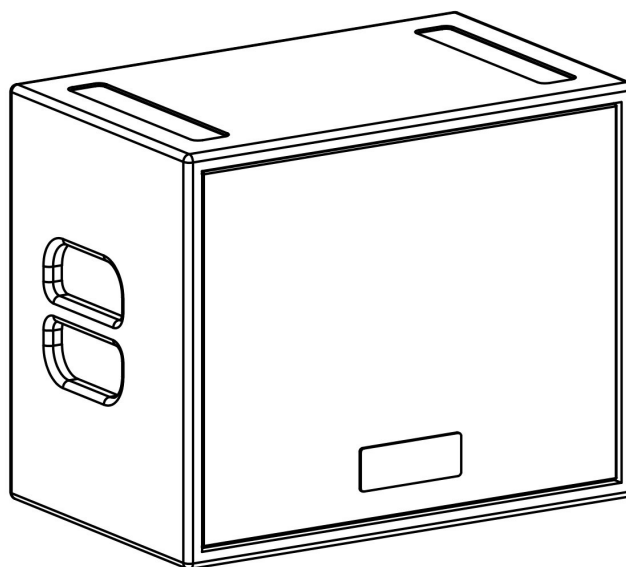

MATRIX

AMPLIFICATION

Q SERIES BACKLINE SPEAKER USER MANUAL



MODELS COVERED:

Q 12 - PASSIVE

Q 12A - AMPLIFIED



DESIGNED AND MANUFACTURED
IN THE UK BY MATRIX.



MATRIX AMPLIFICATION

Thank You

Congratulations on the purchase of your new Matrix loudspeaker. Matrix products are the result of a collaboration between Designers, Engineers and Musicians with many decades of experience in the design and practical in field application of exceptionally robust, reliable and ergonomic audio equipment.

This manual will help you to get the most from your loudspeaker. For maximum benefit, it is recommended that all instructions and warnings are carefully read. Where unsure about anything, please consult a qualified technician.

For warranty service, please retain your receipt and all packaging that comes with the loudspeaker, as it has been specifically designed to transport the cabinet safely.

Unpacking

Please unpack and inspect your new loudspeaker for any damage that may have occurred during transit. If damage is found, notify the carrier immediately.

PLEASE RETAIN ALL FACTORY PACKAGING FOR ANY FUTURE POSTAL TRANSIT.



THIS PRODUCT IS CAPABLE OF PRODUCING SOUND PRESSURE LEVELS WHICH MAY DAMAGE HEARING. THE USER IS RESPONSIBLE FOR EXPOSURE LEVELS AND USE OF HEARING PROTECTION.

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CAUTION:



OBSERVE ALL SAFETY AND USAGE INSTRUCTIONS TO AVOID POSSIBLE DAMAGE TO EQUIPMENT AND EXPOSURE TO HAZARDS (THIS SYMBOL UNIVERSALLY FLAGS CAUTION NOTICES)



LETHAL VOLTAGES PRESENT AT SPEAKER, CABLE AND AMPLIFIER TERMINALS; ENSURE ALL WIRING IS SAFE AND CORRECT BEFORE USE.

(THIS SYMBOL ALSO UNIVERSALLY FLAGS ELECTRICAL HAZARDS)

DO NOT OPEN LOUDSPEAKER; LEAVE ALL INTERNAL SERVICE OPERATIONS TO A QUALIFIED TECHNICIAN.

1. Features and Specifications (Amplified Cabinet):

The Q12a is a 12" coaxial, full range loudspeaker cabinet which has been designed for optimal performance and flexibility within its intended application as a compact musicians backline and pa loudspeaker. This section covers the usage of the **amplified** cabinet modes, providing the user with a self contained, compact, precise, light weight solution.

The design was conceived with considerable consultation with customers and we welcome any comments and suggestions you may have in our continual quest to bring you the products you want to use.

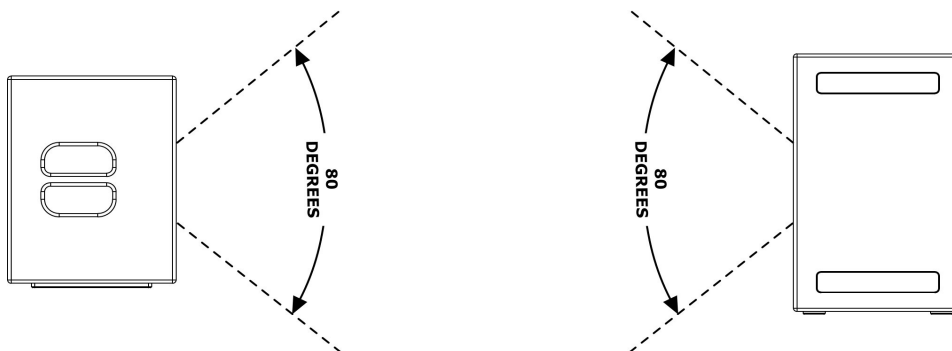
Loudspeaker features:

- **Optimised for Guitar Sound Reproduction With Cabinet Simulation Pre-amps.**

Also suitable for use for monitoring keyboards, vocals and other sources at the users discretion.

- **Coaxial 12" Driver – Providing a Large and Unchanging Sweet Spot of Sound.**

This cabinet contains a coaxial loudspeaker – a single driver incorporating a tweeter driver and paper cone driver designed specifically to work together into a single, constant directivity, spherical point source. This offers the unique advantage of a sound-field which does not significantly change in tonal characteristic wherever the user chooses to listen to the cabinet off axis by up to 40 degrees (a total sound-field span of 80 degrees) both horizontally and vertically. The sound dispersion diagram below illustrates this behaviour.

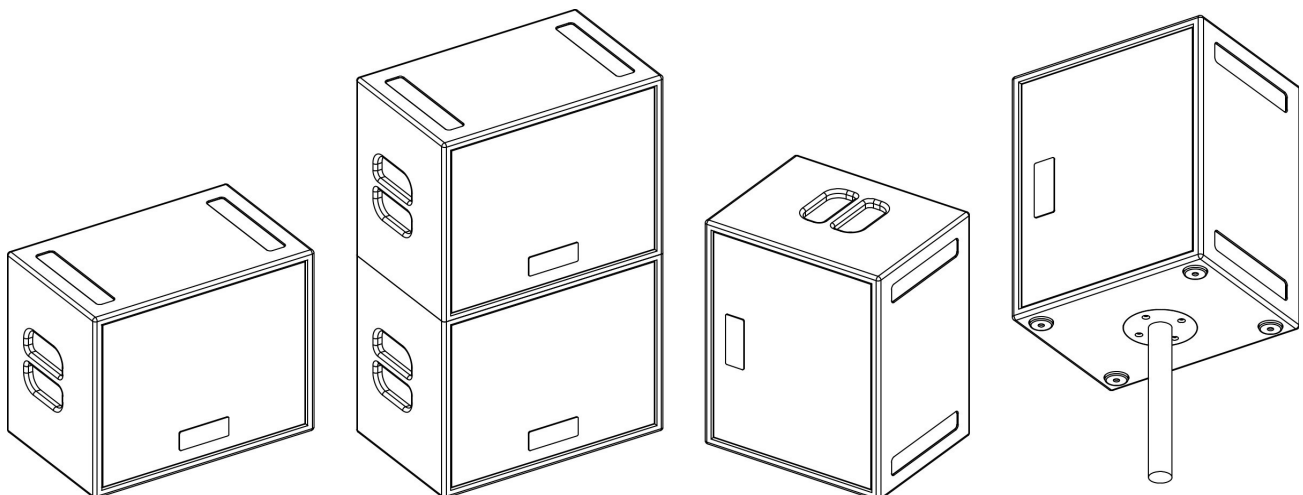


Cabinet produces a wide sweet spot in both planes for faithful reproduction over a wide area.

- **Multiple Orientation Cabinet Design - May be used horizontally or vertically.**
- **The cabinet also allows mounting on a speaker stand via built in 38mm pole receptacle.**

The design of the cabinet allows for use in Horizontal, Vertical and speaker stand mounted Vertical configurations and also has interlocking feet for easy, secure stacking of multiple cabinets.

The cabinet orientation diagram below illustrates some possible configurations.



Loudspeaker Specifications:

Q 12 a

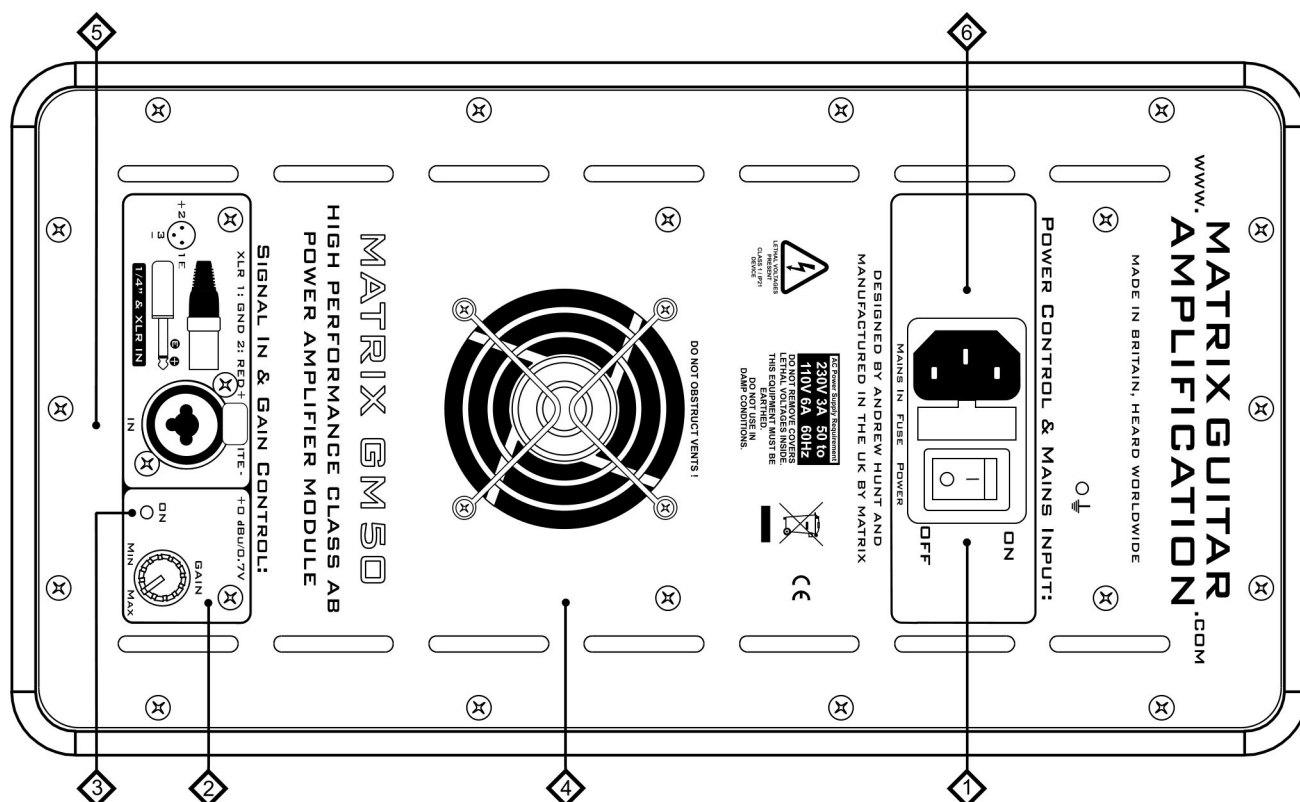


Number of Audio Channels:	1
Amplifier Module :	GM 50
Supply Voltage :	230V / 110V +/- 15%
Average Supply Current, Full Load :	3A / 6A
Input Level Sensitivity :	0.775v / 0 dBu
Frequency Bandwidth Nominal :	40-20,000 Hz
Sound Dispersion Pattern Nominal :	80H x 80V Degrees
Cabinet Weight :	15.9 Kg
Cabinet Dimensions Inches :	14.75H x 17.9W x 11.2D
Cabinet Dimensions Millimetres :	375H x 455W x 285D

*THIS PRODUCT IS
CAPABLE OF
PRODUCING SOUND
PRESSURE LEVELS
WHICH MAY DAMAGE
HEARING.*

*THE USER IS
RESPONSIBLE FOR
EXPOSURE LEVELS AND
USE OF HEARING
PROTECTION.*

2. Amplifier Feature Overview:



(1) Power Switch

This switch controls the power supply to the amplifier. There is a short delay on power-up; this is to avoid the switch-on "thump" which could damage the loudspeakers.

(2) Gain Control

The level trim for the amplifier is set via this control. Rotating the knob fully clockwise, results in no attenuation to the incoming audio signals.

(3) Power Indicator

This indicator shows when the amplifier is on and is receiving power.

(4) Cooling Fan Outlet

Hot air exits here. Make sure the ventilation area behind cabinet is free from obstruction and air flows freely, otherwise the amplifier is likely to enter protect mode or in some extreme circumstances damage may occur.



(5) Input Signal Socket

This is a combined female XLR and 1/4" jack socket which allows connection to both 1/4" instrument patch leads and industry standard Balanced XLR systems. Note these inputs are not suitable for direct connection to instruments, the cabinet is intended to be driven by the use of a suitable preamp/pedal.

CAUTION !

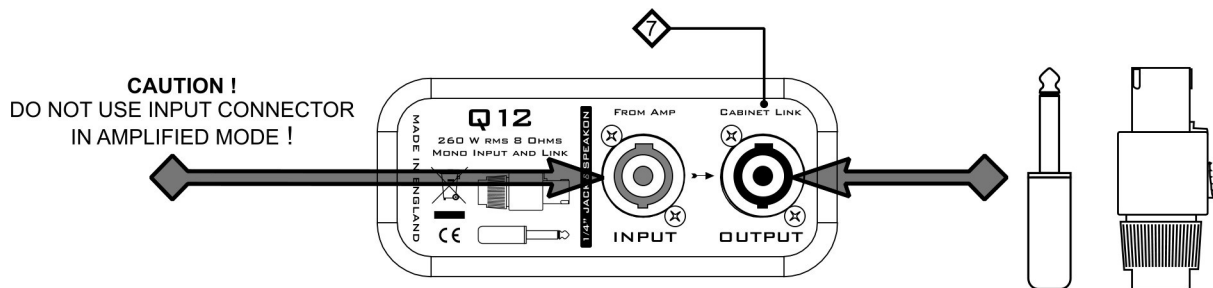
DO NOT connect the speaker driving output from other power amplifiers to this input socket. It is not intended to be used in this manner, damage will occur !



(6) Power Connection and Fuse

Mains power is supplied to the amplifier by a standard 10 Amp IEC mains socket. An appropriate mains lead is supplied with the amplifier. Also, the amplifiers fuse is installed within the connector block, Should this need to be replaced, refit with same rating and type. If unsure about any servicing procedures, please contact qualified service personnel.

(7) External Loudspeaker Cabinet Link



In amplified mode, this connector block is intended to be used to connect another identical un-amplified slave cabinet as needed. To prevent potential damage to equipment, only use identical passive slave cabinets and ensure cable link chosen is suitable for carrying high power speaker signals; if unsure, contact a suitably qualified engineer.

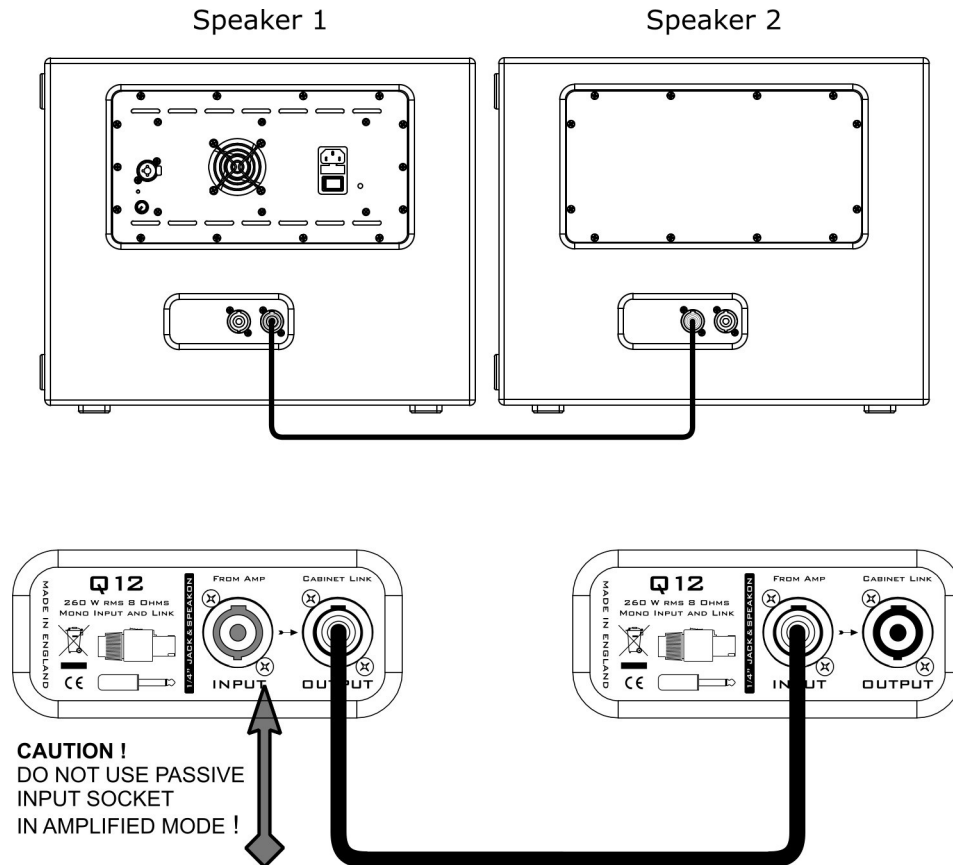
When the internal amplifier is operating, the above input should NOT be used under any circumstances, it is intended for passive modes only. In the case of the amplified cabinet, these are available when the amplifier is not connected to the mains supply or turned on. For further information on how to use these modes, consult the Passive cabinet section of this manual.

CAUTION !

Whilst it is possible to use an external amplifier to power a cabinet which also includes the amplifier module if needed, in the same manner as the passive cab, the internal amplifier MUST be turned off and disconnected from mains supply in order to ensure irreversible damage does not occur to equipment.



3. Connecting to a Passive Slave Cabinet:



- Cabinet Link Connectors support the use of 1/4" Jack and Speakons.**

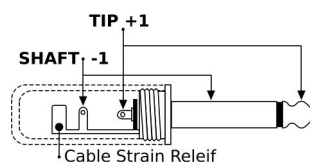
To maintain compatibility with system configurations many musicians are familiar with, the ability to connect to the loudspeaker using 1/4" Jacks is also provided via combination dual format Speakon connectors.

We would like to recommend however that Speakon connectors are used where possible for connecting loudspeaker cabinets, as this decreases the chance of damaging equipment or electrocution through accidental exposure to the live end of an amplifier output lead, shorting, or connection to line level inputs.

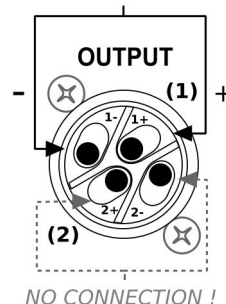


Loudspeaker Terminal Connections:

1/4" Jack Input Option:



OUTPUT LINK



For reference only, consult a qualified engineer if cable wiring modifications are required.

4. Features and Specifications (Passive Cabinet):

The Q12 is a 12" coaxial, full range loudspeaker cabinet which has been designed for optimal performance and flexibility within its intended application as a compact musicians backline and pa loudspeaker. This section covers the usage of the **un-amplified** cabinet modes, leaving the user free to choose an external amplifier to power this cabinet.

The design was conceived with considerable consultation with customers and we welcome any comments and suggestions you may have in our continual quest to bring you the products you want to use.

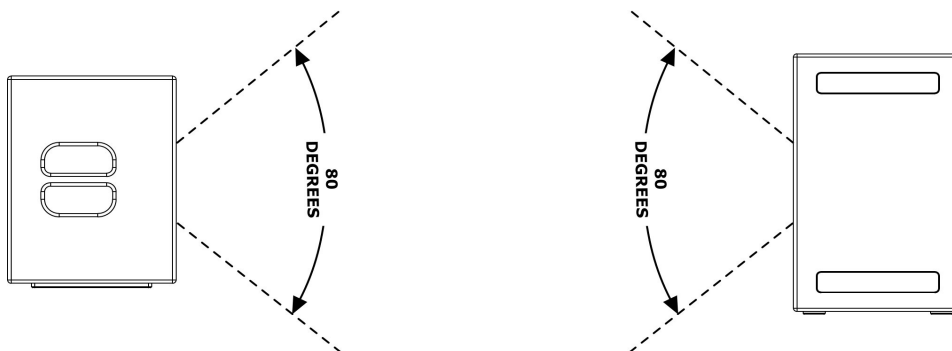
Loudspeaker features:

- **Optimised for Guitar Sound Reproduction With Cabinet Simulation Pre-amps.**

Also suitable for use for monitoring keyboards, vocals and other sources at the users discretion.

- **Coaxial 12" Driver – Providing a Large and Unchanging Sweet Spot of Sound.**

This cabinet contains a coaxial loudspeaker – a single driver incorporating a tweeter driver and paper cone driver designed specifically to work together into a single, constant directivity, spherical point source. This offers the unique advantage of a sound-field which does not significantly change in tonal characteristic wherever the user chooses to listen to the cabinet off axis by up to 40 degrees (a total sound-field span of 80 degrees) both horizontally and vertically. The sound dispersion diagram below illustrates this behaviour.

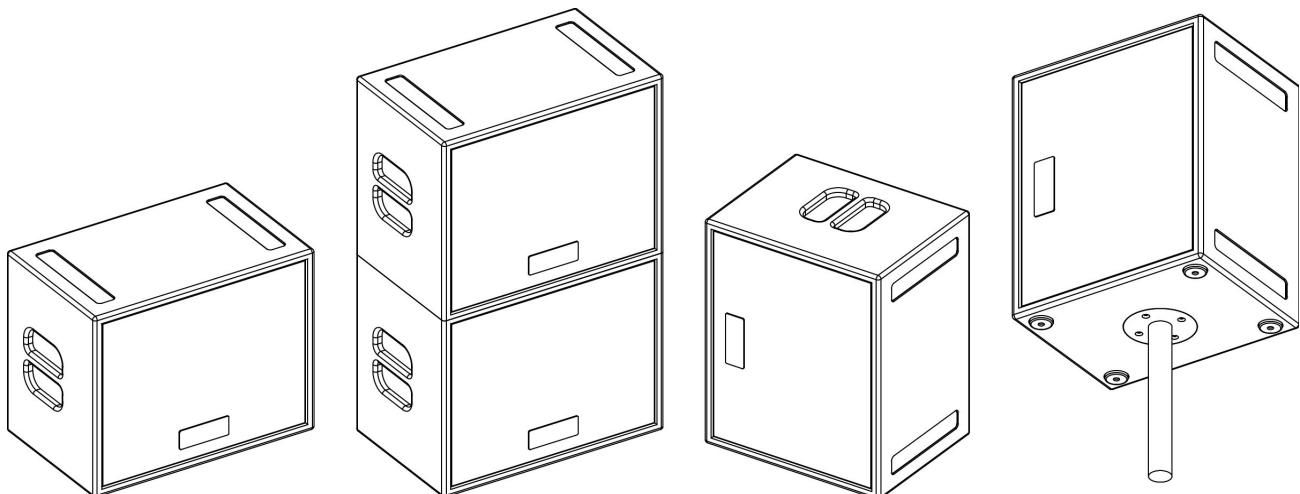


Cabinet produces a wide sweet spot in both planes for faithful reproduction over a wide area.

- **Multiple Orientation Cabinet Design - May be used horizontally or vertically.**
- **The cabinet also allows mounting on a speaker stand via built in 38mm pole receptacle.**

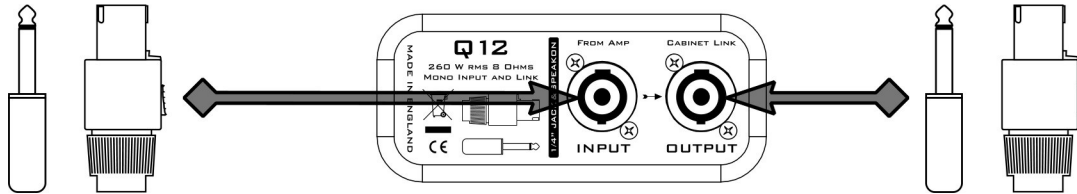
The design of the cabinet allows for use in Horizontal, Vertical and speaker stand mounted Vertical configurations and also has interlocking feet for easy, secure stacking of multiple cabinets.

The cabinet orientation diagram below illustrates some possible configurations.



• **Cabinet Connectors support the use of 1/4" Jack and Speakon Connections.**

To maintain compatibility with system configurations many musicians are familiar with, the ability to connect to the loudspeaker using 1/4" Jacks is also provided via combination dual format Speakon connectors.

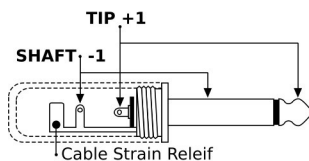


We would like to recommend however that Speakon connectors are used where possible for connecting loudspeaker cabinets, as this decreases the chance of damaging equipment or electrocution through accidental exposure to the live end of an amplifier output lead, shorting, or connection to line level inputs.



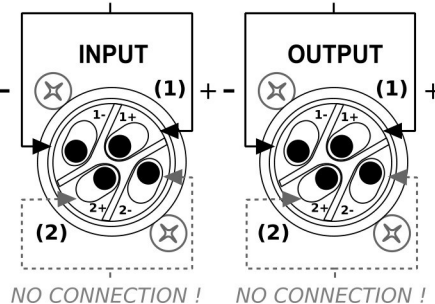
Loudspeaker Terminal Connections:

1/4" Jack Input Option:



INPUT (FROM AMP)

OUTPUT LINK



For reference only, consult a qualified engineer if cable wiring modifications are required.

Loudspeaker Specifications:

Q 12

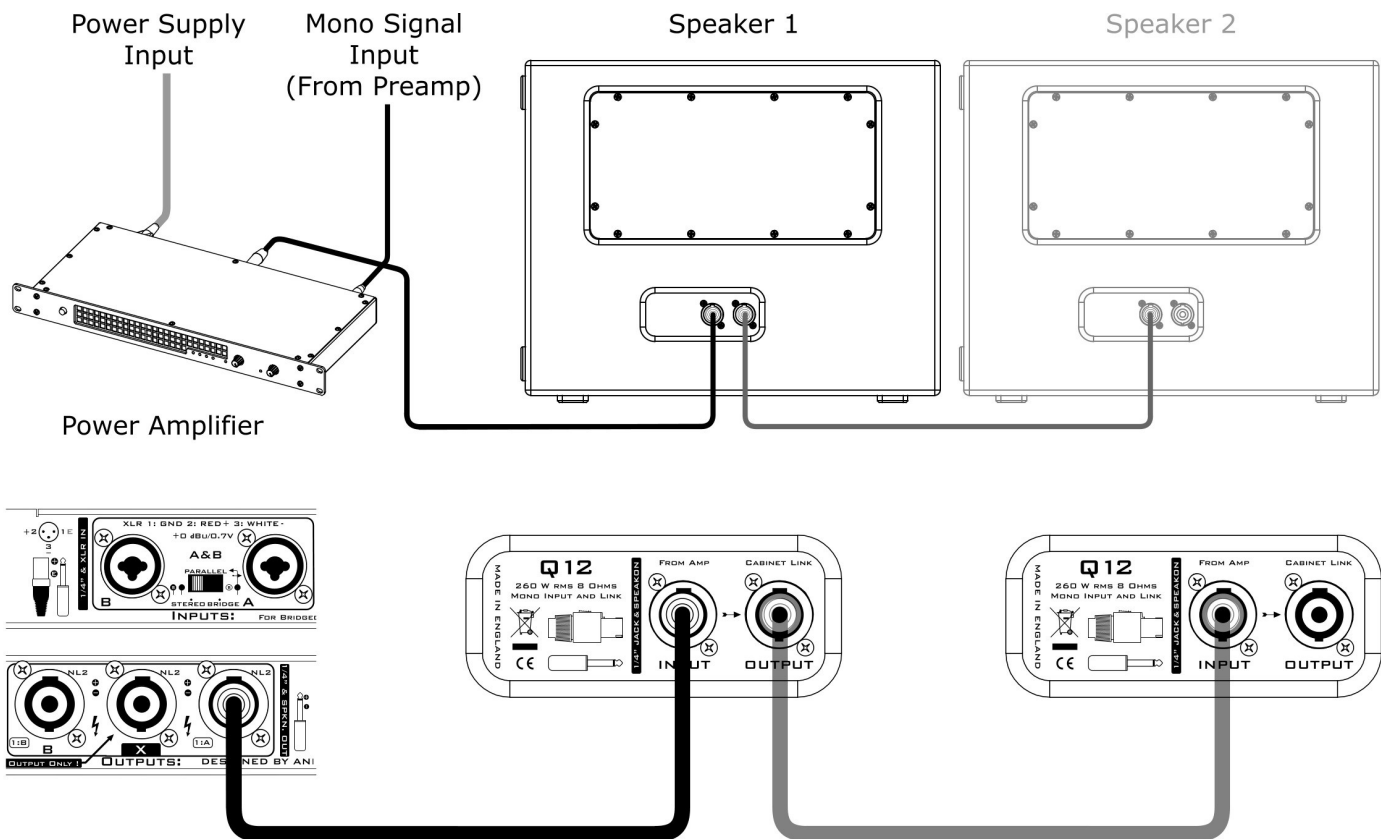
Number of Audio Channels:	1
Power - Watts/RMS Continuous :	260 W
Power – Watts/Peak Headroom :	520 W
Cabinet Impedance :	8 Ω
Frequency Bandwidth Nominal :	40-20,000 Hz
Sound Dispersion Pattern Nominal :	80H x 80V Degrees
Cabinet Weight :	13 Kg
Cabinet Dimensions Inches :	14.75H x 17.9W x 11.2D
Cabinet Dimensions Millimetres :	375H x 455W x 285D



THIS PRODUCT IS CAPABLE OF PRODUCING SOUND PRESSURE LEVELS WHICH MAY DAMAGE HEARING.

THE USER IS RESPONSIBLE FOR EXPOSURE LEVELS AND USE OF HEARING PROTECTION.

5. Mono Loudspeaker Usage (Passive Cabinet):



For Mono (single channel applications) connect the speaker cabinet to the amplifier as shown. Where chaining additional cabinets to the same amplifier channel is required, the Output Link from the first cabinet can be used as shown above in grey.

When connecting one or more speakers to an amplifier ensure that the amplifier can handle the load presented and that the configuration is properly matched for safe and optimal performance. A Table of recommended combinations is provided on page 6.

If unsure about any aspect of using the loudspeaker system, consult with a suitably qualified audio engineer.

The speaker cabinet is a Mono only device, under NO circumstances attach multiple amplifier channels to the same cabinets connector block, otherwise poor performance and damage to equipment being used is likely to occur.

For stereo applications please follow the instructions on the next page, using two or more speaker cabinets.

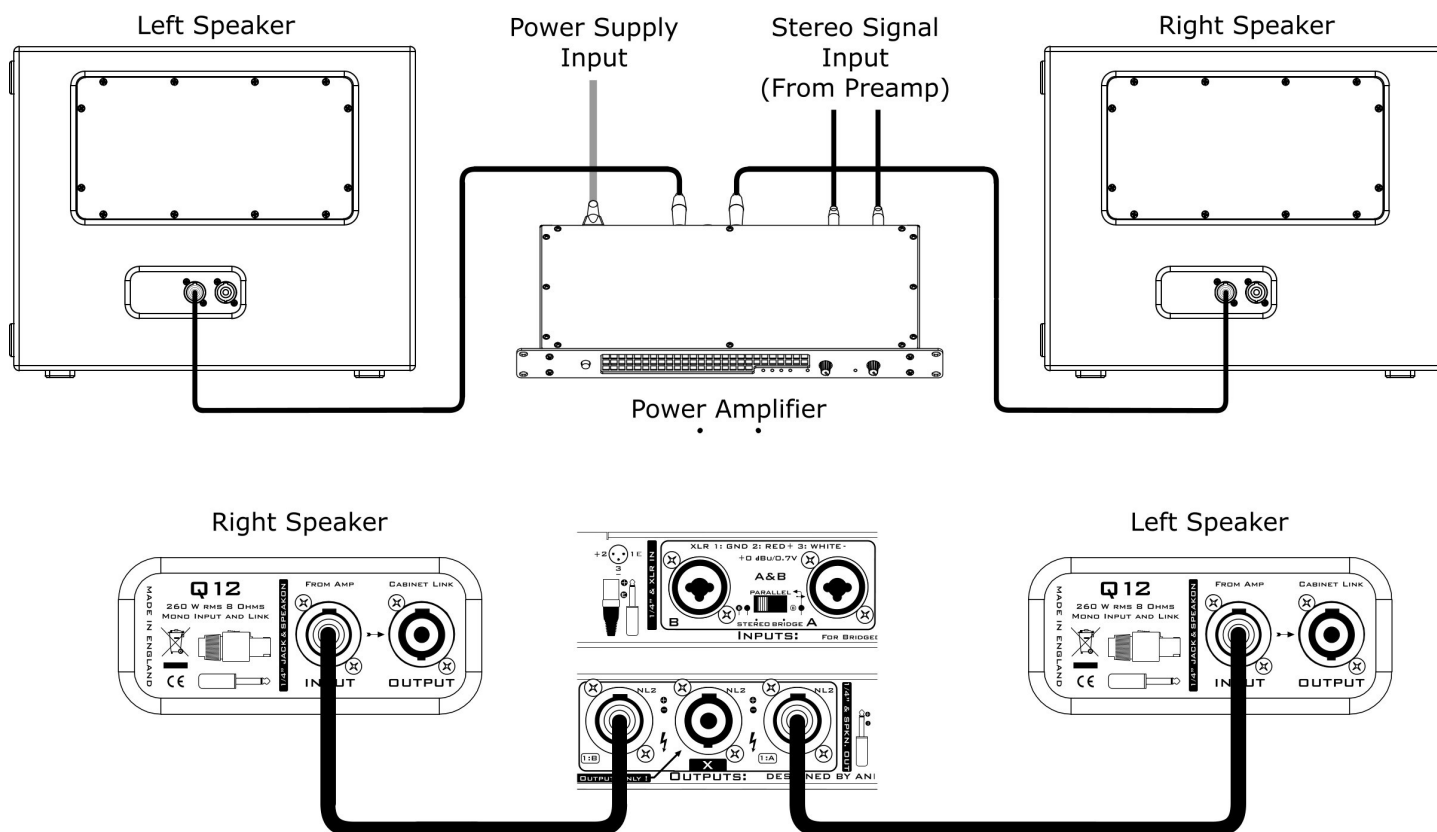
Also note that series and series parallel connections cannot be used with this cabinet due to the presence of an internal crossover splitting the signal for the coaxial driver; poor performance will result.

CAUTION !

Whilst it is possible to use an external amplifier to power a cabinet which also includes the amplifier module if needed, in the same manner as the passive cab; This MUST be turned off and disconnected from mains supply in order to ensure irreversible damage does not occur to equipment.



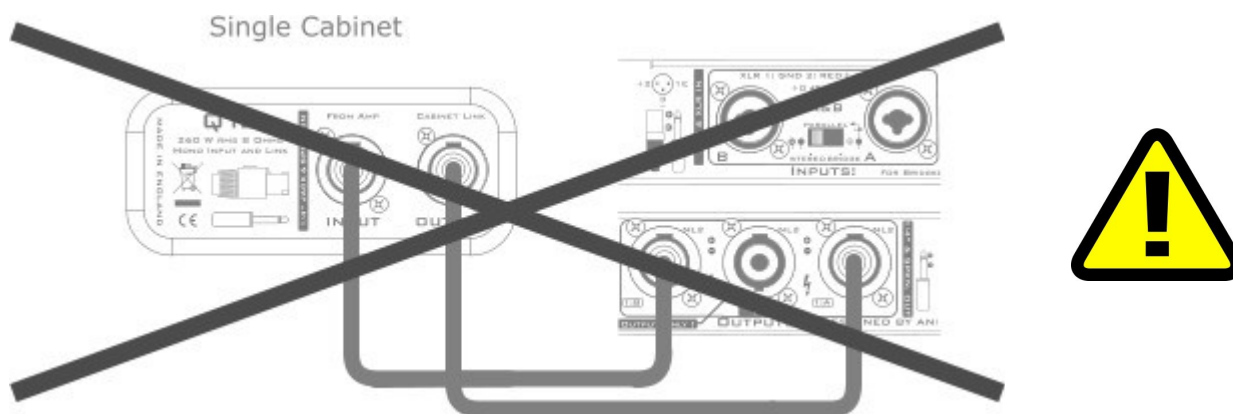
6. Stereo Loudspeaker Usage (Passive Cabinet):



For Stereo loudspeaker usage, two or more cabinets are required, connect as shown above. When multiple cabinets are required on the same amplifier channel, connect additional loudspeakers as shown on the previous page.

Also note that series and series parallel connections cannot be used with this cabinet due to the presence of an internal crossover splitting the signal for the coaxial driver; poor performance will result.

Under NO circumstances connect multiple amplifier channels to the same cabinet !



Irreversible damage to both speaker, amplifier and associated equipment is likely to occur and is not covered by warranty.

7. Recommended Amplification (Passive Cabinet):

We recommend the use of matrix GT and GM series amplifiers to power the Q12 optimally; however other amplifiers maybe used at users discretion.

As a rule of thumb concerning musical instrument use of the cabinet in combination with an amplifier, a power capacity of up to twice the continuous RMS rating is permissible for solid state amps; provided the source doesn't maintain a continuous level tone (e.g. some electronic organs), this allows the cabinet to work at full output without amplifiers clipping readily.

Amplifiers of less than rated minimum power are not recommended as hard clipping typically present when solid state amps are over driven is likely to damage the loudspeaker.

Valve amplifiers however maybe used at lower power levels as specified below, as they clip much more softly when over driven, resulting in less stress on the driver than an abused solid state amplifier. With valves this is done no less to extract the tonal characteristics of valves driven near their limit. We recommend however that a solid state amplifier is used within its limits and one of the many excellent cabinet modelling effects units is used to recreate this tonal effect at any desired volume level, rather than ramping it up to 'eleven'.

Matrix Amplifiers:

Recommended Amplifiers:	1 cabinet per amplifier channel:	2 cabinets per amplifier channel:	Max total cabs per an Amp:
GT800FX	YES	YES	4
GT1000FX	YES	YES	4
GM50 - (mono)	YES	YES	2
Also Supported:			
XT800	YES	YES	4
XT1000	YES	YES	4
XT2004	YES	YES	8
XT2004EQ	YES	YES	8

We recommend the guitar series amplifiers (GT/GM) are used for optimal performance.

Parallel Cabinet Impedance Table:

Parallel cabs:	1	2	3	4
Impedance:	8	4	2.66	2
Notes:			Not recommended	Not recommended

Paralleling more than two speakers is done at user discretion, we recommend a maximum of 2 per amplifier channel even where the amplifier will support more for optimal performance. Also note series and series parallel connections are not supported.

3rd Party Amplification:

Amplifier Type:	Recommended min. power:	Recommended max. power:
Solid State	200 W @ 8Ω amp rating	520 W @ 8Ω amp rating
Valve	50 W @ 8Ω amp rating	100 W @ 8Ω amp rating

Full Two Year Warranty

Summary of Warranty

Matrix Amplification Limited, warrant to you, the ORIGINAL PURCHASER of each Matrix Loudspeaker, for a period of 2 (two) years from the date of purchase, that the Loudspeaker is free from defects in materials and workmanship and we further warrant the new Matrix Loud Speaker, regardless of the reason of failure except as excluded in this warranty.

Items Subject to Exclusion from this Warranty

This Matrix Loudspeaker Warranty is in effect only for failure of a new Matrix Loudspeaker which occurred during the warranty period. It does not cover any product that has been damaged because of any misuse be it intentional or otherwise, accident, negligence, or loss which is covered under any insurance.

What the Warranter Will Do

We will remedy any defect, regardless of the reason for failure (except as excluded above), by repair or replacement. Warranty work can only be performed at our authorised distributors or at Matrix Amplification Limited. We will remedy the defect and ship the product from the service centre or our own factory within a reasonable time after receipt of the defective product. All expenses in remedying the defect, including freight costs from ourselves to you (within mainland UK) will be borne by us. You must bear the costs of shipping the product to our authorised service centre or factory.

How to Obtain Warranty Service

You must notify us of your need for warranty service not later than the expiry of your warranty. The Loud Speaker must be shipped in a factory pack, which if required can be obtained from us at a modest charge. The Loudspeaker must be sent to us carriage paid and insured. Corrective action will be taken within a reasonable time from the date of receipt of the defective product by us or our authorised service centre. If repairs made by us or our authorised service centre are not satisfactory, contact us immediately.

Warranty Alterations

No person has the authority to enlarge, amend or modify this warranty. The warranty is not extended by the length of time which you are deprived of the use of the Loud Speaker. Repairs and replacement parts will only carry the unexpired portion of this warranty.

Design Changes

Matrix Amplification Limited has a policy of continuous improvement to designs without notice and with no obligation to make corresponding changes in products previously manufactured.

Your Statutory Rights are Unaffected by this Warranty

Declaration of CE Conformity

Issuers Name and Address: Andrew Hunt,
MATRIX AMPLIFICATION LIMITED,
Unit 1b, Techways,
Wonastow Road Industrial Estate,
Monmouth,
Wales,
NP25 5JA.

Products: Q 12

Equipment Type: Commercial Audio Loudspeaker and Amplifier Equipment.

Safety Standards:

EN 60065 :2002+A12 : 2011 Safety requirements: Audio, video and similar electronic apparatus.

AMD1: 2005 and IEC 60065: 2001 7th Ed. Safety Requirements - Audio Video and Similar Electronic Apparatus.

EMC Standards:

EN 61000-4-2:2001 Electrostatic Discharge Immunity (Environment E2-Criteria B, 4k V Contact, 8k V Air Discharge).

EN 61000-4-3:2006 Radiated, Radio-Frequency, Electromagnetic Immunity (Environment E2, criteria A).

EN 61000-4-4:2007 Electrical Fast Transient/Burst Immunity (Criteria B).

EN 61000-4-5:2006 Surge Immunity (Criteria B).

EN 61000-4-6:2006 Immunity to Conducted Disturbances Induced by Radio-Frequency Fields (Criteria A).

EN 61000-4-11:2001 Voltage Dips, Short Interruptions and Voltage Variation.

EN 55103-1:1997 Electromagnetic Compatibility - Product Family Standard for Audio, Video, Audio-Visual and Entertainment Lighting Control Apparatus for Professional Use, Part 1: Emissions.

EN 55103-1:1997 Magnetic Field Emissions-Annex A @ 10 cm and 20 cm.

EN 55103-2:1997 Electromagnetic Compatibility - Product Family Standard for Audio, Video, Audio-Visual and Entertainment Lighting Control Apparatus for Professional Use, Part 2: Immunity.

EN 61000-3-2:2005 and AMD1: 2008 Limits for Harmonic Current Emissions (equipment input current less than or equal to 16 A per phase).

EN 55022:2006 Limits and Methods of Measurement of Radio Disturbance Characteristics of ITE: Radiated, Class B Limits; Conducted, Class A.

EN 61000-3-3:2008 Limitation of Voltage Fluctuations and Flicker in Low-Voltage Supply Systems Rated Current less than or equal to 16A.

Declaration:

I certify that the product identified above conforms to the above standards.

Signatories:

Andrew Hunt,
Managing Director.



Date of Issue:

10th December 2012.